GAMIFICATION IN E-COMMERCE: ADVANTAGES, CHALLENGES, AND FUTURE TRENDS

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Abstract:
Over the last decades, gamification has become increasingly used, its benefits being also recognized by a large cluster of e-Commerce providers and consumers. By applying game mechanics and techniques to non-game contexts, gamification certainly has the potential to devise more compelling and enjoyable experiences for customers, motivating them to complete desired actions and behaviors.

The current research aims to highlight the advantages, challenges, and future trends of gamification integration in e-Commerce, starting by emphasizing the interest on the analyzed topic from the scientific research perspective and subsequently offering a better understanding on the phenomenon evolution. However, in order to achieve the stated research objective, the process implied approaching three well-known and easy-to-understand analysis tools, namely the SWOT, VRIO and PESTLE instruments, applied from the company's perspective, relative to the general framework.

Finally, the paper examines the future trends of gamification in e-Commerce, mainly considering the tech evolution, but also the different generations characteristics. Emerging technologies such as AI, AR/VR, wearables, IoT, blockchain, and others were mentioned as instruments that can be used to create even more immersive and personalized gamification experiences for customers.

Overall, the present study demonstrates that gamification represents a long-term valuable strategy for e-Commerce platforms looking to increase customer engagement and loyalty. However, successful gamification requires careful planning, user testing, and ongoing optimization to ensure that it aligns with business goals and customer needs. The future of gamification in e-Commerce will be driven by emerging technologies that can create even more customer-shaped experiences, characterizing gamification as an essential stratagem for e-Commerce businesses aiming to stay ahead of the competition.

Keywords: Gamification, e-Commerce, Business, Enterprise, Competitive Advantage

JEL classification: O00, O14, L81

1. Introduction

Without referring to the term *gamification* per se as a new one, the gamification process itself currently ensures, in various fields, the transition from usual possibilities of interaction with the user, specific to a technological instrument, to complex experiences inspired by games. The specialized literature abounds in definitions regarding gamification, but one of the most frequently recalled was given by Deterding et al. (Deterding, Dixon, Khaled, & Nacke, 2011), who characterized the course of action in question as the use of game-specific design elements in non-game contexts.

The reality of the last decades has led to the gamification advantages awareness, the phenomenon exerting its influence on numerous human spheres of action, including the business environment. Related to the business environment, although not limited to, gamification is largely associated with the e-

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Commerce tools, in whose mode of operation it becomes almost crucial. Considering the unquestionable competition between e-Commerce businesses and the growing capacity of related applications to exceed the bounds of game elements integration, the e-Commerce gamification could be both characterized as a trend and as a necessity in the modern economy and society.

On one hand, gamification has become a trend in e-Commerce in recent years. Many online retailers are using gamification elements such as loyalty programs, badges, and reward systems in order to increase customer engagement, retention and, consequently, their overall sales. The gamification elements can make the shopping experience more appealing, enjoyable, interactive, and satisfying for customers. On the other hand, gamification can also be a necessity for e-Commerce businesses to stay competitive within today's market. Given the increasing number of online retailers, it can be challenging for businesses to stand out and retain customers. Under these circumstances, gamification can help businesses differentiate themselves from their competitors and create a more loyal customer base.

Moreover, gamification usage in e-Commerce represents a global tendency and is being used by companies in various parts of the world. Nevertheless, the level of adoption and implementation of gamification in e-Commerce can vary across different regions and countries. Compared to non-European countries such as the United States, China, and Japan, Europe has a relatively high adoption of gamification in e-Commerce. European companies have been quick to adopt gamification strategies to engage customers and drive sales, particularly in the fashion and beauty industries. One reason for this could be the strong tech industry in Europe, particularly in countries like Sweden, Germany, and France, which has allowed companies to develop innovative gamification strategies. Additionally, European consumers are generally tech-savvy and have a high adoption rate of digital platforms, making it easier for companies to implement gamification strategies.

However, it is important to note that gamification remains a global trend, and non-European countries such as the United States and China have also seen significant adoption and implementation of gamification in e-Commerce. For example, many US-based companies have implemented gamification strategies in their loyalty programs, while Chinese e-Commerce giants such as Alibaba and SHEIN have efficiently incorporated gamification elements in their platforms in order to drive engagement and sales.

Due to the awareness of the importance of gamification in e-Commerce, a fact directly linked to the previously mentioned aspects, the objectives of the current research consists in (1) highlighting noteworthy information related to the interest on the association between gamification and e-Commerce, at conceptual level, (2) understanding the phenomenon of using gamification in e-Commerce as a whole, (3) identifying the advantages and challenges that the adoption of gamification in e-Commerce can have, from the perspective of the business entity, but also (4) outlining key trends for the future implementation of gamification in e-Commerce.

2. Methodology

From a methodological point of view, the current study mainly uses mixed-qualitative research methods to serve the predefined goals, the performed analysis being primarily based on existing results on the considered topic. Firstly, an advanced search was conducted using the Web of Science electronic database. The search terms included "gamification," "e-Commerce", and other specific keywords, aiming to identify key information with respect to the interest on the association between gamification and e-Commerce, from the scientific research perspective.

Intending to provide a better understanding on the phenomenon, but also to describe the advantages, challenges, and future trends of gamification adoption in e-Commerce, the study was conducted mainly using secondary data sources, such as industry reports, news articles, and other publicly available sources, also implying sketching the SWOT, VRIO, and PESTLE analyses to provide comprehensive results.

The present paper does not involve human participants; therefore, no ethical approval was required. However, the researchers ensure that they followed ethical guidelines for conducting literature

reviews, including acknowledging the sources of the included research and obtaining permission to use copyrighted material where necessary.

3. The Interest on the Association between Gamification and e-Commerce

The association between gamification and e-Commerce can be analyzed from multiple perspectives, either related to the meaning of the relationship between the two directions of interest in the existing real processes, or at the conceptual level, the latter representing the focus in the current paper section. To identify key general aspects regarding the relationship between gamification and e-Commerce, attention was focused on scientific publications. Even though the existing public sources on the phenomenon abound in quantity, the analysis from the perspective of scientific research was considered appropriate. In this regard, the Web of Science Core Collection database was chosen as a tool for searching and obtaining results.

The search for results was based on the advanced search option offered by Web of Science, involving defining the selection query. In the initial phase, the formulated query led to obtaining 66 results considered relevant to it, being defined as follows: *TS=("gamification") AND TS= ("e-Commerce")*. Despite the fact that the TS field allowed searching in the titles, abstracts and keywords of the publications, while the considered period was 1945 - present (2023), the number of selected results was very narrowed, the first resulting paper dating from 2014.

Given that the term *gamification* itself is relatively new, this could be one of the reasons of obtaining the limited number of results after running the first defined query. In fact, according to Kalali et al. (Kalali, Richerson, Ouzunova, Westphal, & Miller, 2019), gamification benefited from the first description on Google in 2010, subsequently gaining increasing interest.

Therefore, intending to obtain more relevant and comprehensive results, the initial search query was widened by including the most common nouns associated with gamification, being used as follows: *TS=("gamification" OR "game" OR "gaming") AND TS= ("e-Commerce")*. Thus, maintaining the analysis period 1945 - 2023 (the widest possible search period in the Web of Science) and the TS field, the number of resulting records considerably increased, to 862.

The year 1999 represented the beginning of the scientific publications focused on the phenomenon reflected by the search query defined and used indexing within the Web of Science. Undeniably, the interest was growing, but the last decade highlights its strengthening, noting the last two years, in which the number of indexed works exceeded 100 (Figure 1).

**Figure 1: The number of selected scientific publication per years (2013 – 2022)**
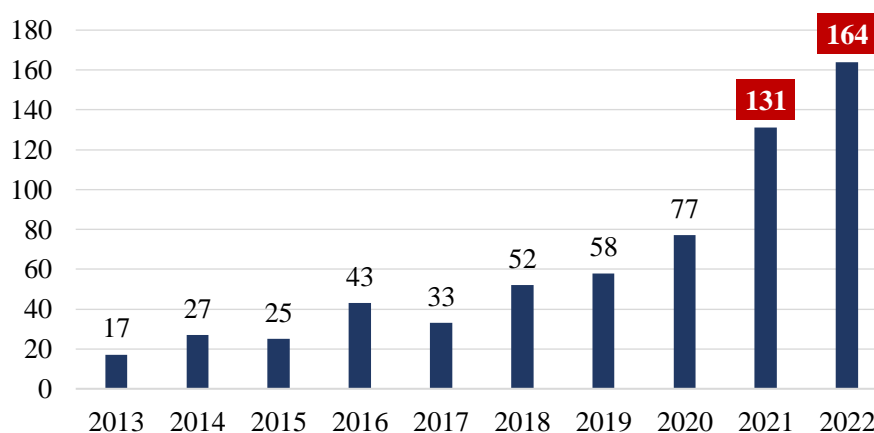
Source: Authors' sketching based on the raw data obtained after querying the database

According to the raw results obtained after querying the database, the association between gamification and e-Commerce represents, at conceptual level, a multidisciplinary research topic, the top

ten Web of Science categories from which the relevant publications were selected are presented in Figure 2, consistent with the related number of papers.

Figure 2: The number of selected scientific publication by Web of Science categories
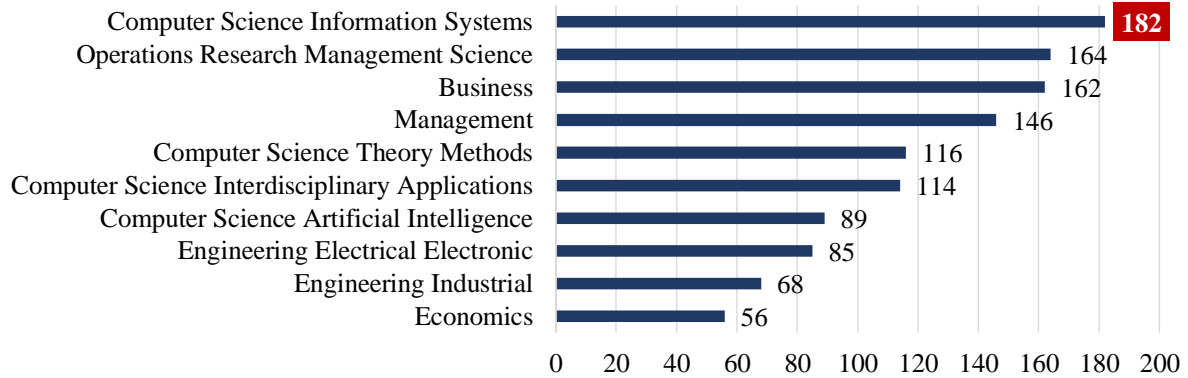
Source: Authors' sketching based on the raw data obtained after querying the database

The fact that papers focused on the association between gamification and e-Commerce resulted from 62 different countries/regions (Figure 3) highlights the global interest and importance of the topic. Furthermore, considering the increased number of countries (as research contributors) focusing on the topic in question also suggests that the area of study has practical implications for businesses worldwide. As e-Commerce continues to grow in importance, companies need to find innovative ways to engage their customers and provide a better overall experience. Gamification may be one such strategy, and being studied across the world indicates that it is a strategy that is worth exploring.

Figure 3: The number of selected scientific publication per country/region
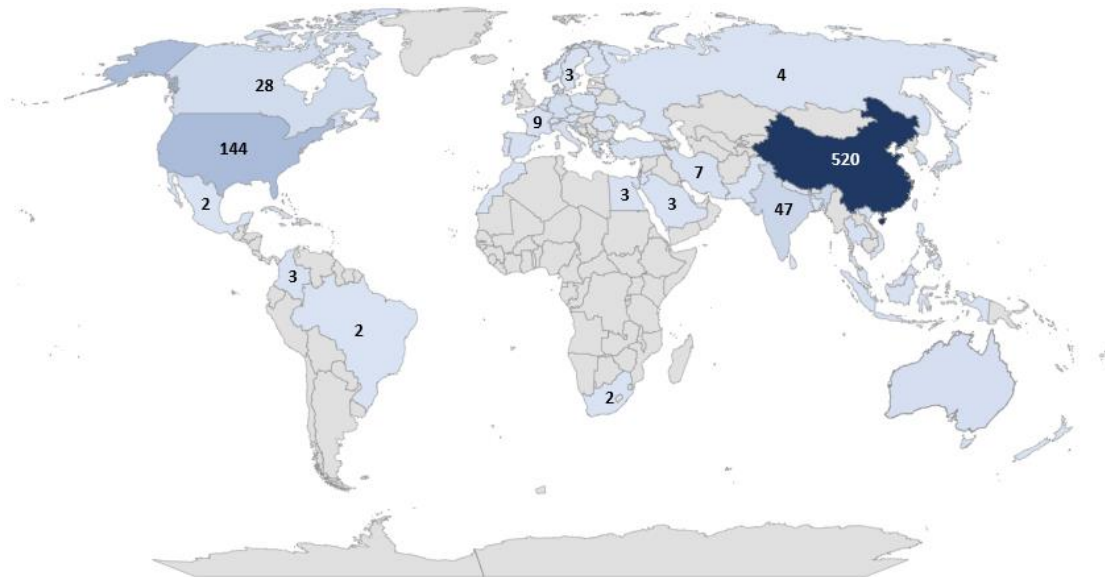
Source: Authors' sketching based on the raw data obtained after querying the database

Briefly exploring the selected publications, through titles and abstracts, it was observed that researchers are investigating various aspects of gamification in e-Commerce. For example, some studies may focus on the effectiveness of different game elements in promoting customer engagement and loyalty, while others may investigate the impact of gamification on consumer behavior, such as the willingness to make purchases. However, the previously mentioned aspects are only observations at first glance.

To conclude, the raw results obtained from the advanced search in Web of Science indicate a significant body of research exploring the relationship between gamification and e-Commerce. These findings demonstrate the growing interest in the approached area and suggest that gamification may be a promising strategy for businesses looking to improve their activity in the e-Commerce industry.

4. Key Shifts of Gamification in e-Commerce

From its beginnings to the present, the use of gamification in e-Commerce has come a long way, evolving in ways difficult to anticipate at the outset. Under the valuable influence of numerous factors, characteristic of technological evolution but not only, gamification has acquired new and powerful values, some of the key transitions being summarized as follows:

- **From basic loyalty programs to more sophisticated game mechanics**: Initially, gamification in e-Commerce was mainly focused on basic loyalty programs that rewarded customers with points or other forms of benefits for their purchases. Nowadays, gamification has become more sophisticated, with the integration of game mechanics like challenges, leader boards, and rewards, aimed to provide customers with a more engaging and immersive experience.

- **From standalone games to integrated experiences**: Early gamification in e-Commerce often involved standalone games or challenges that were separated from the core shopping experience. More recent approaches to gamification have integrated game-like elements more seamlessly into the shopping process, creating a holistic experience. For example, e-Commerce websites might use gamification to encourage customers to explore different product categories or to complete a purchase by offering rewards or incentives along the way.

- **From static to dynamic gamification**: In the beginning, gamification tools used in e-Commerce were often static, with rewards and challenges staying the same over time. Today, businesses are using dynamic gamification, where challenges and rewards are updated regularly to sustain the customers' engagement and motivation.

- **From passive engagement to active engagement**: Firstly, the gamification efforts often relied on passive engagement, such as simply completing a survey or watching a video. However, more recent approaches to gamification have emphasized active engagement, encouraging users, i.e., customers, to take a more active role in the experience.

- **From extrinsic to intrinsic motivation**: Although in the past gamification in e-Commerce focused mainly on extrinsic motivation, such as rewards and discounts, businesses are now using intrinsic motivation, such as a sense of accomplishment and personal satisfaction, to engage customers in a more meaningful way.

- **From scarcity to abundance**: The well-known previous practice consisted of gamification tools that were often relied on scarcity to drive engagement, such as offering limited-time rewards or discounts. The latest gamification efforts have embraced abundance, offering customers a wider range of opportunities to engage and interact with the experience.

- **From functional to emotional benefits**: Initial gamification attempts primarily focused on functional benefits, such as discounts or rewards for completing certain actions. However, more recent gamification attempts have emphasized emotional benefits, such as providing customers with a sense of fun, enjoyment, and social connection.

- **From individual to social gamification**: At the outset, gamification in e-Commerce was focused on individual engagement. Nevertheless, businesses are now incorporating social gamification elements to encourage customers to share their experiences with friends and compete against each other. This can help to create a sense of community around the brand.

- **From desktop to mobile**: As mobile devices become more ubiquitous, gamification in e-Commerce has shifted towards mobile platforms. At present, many e-Commerce businesses offer mobile apps with gamification elements that are optimized for smaller screens and touch-based interfaces.

Surely, the transitions with respect to the use of gamification in e-Commerce mentioned previously represent only a few directions of interest to be considered from a large cluster, with the aim of highlighting the overall progress in this field. In fact, these changes appeared under the influence of factors positively affecting evolution, the nature of which greatly varies, from the evolution of technology as a whole, to the needs characteristic to new generations or cultural differences.

Considering the above presented aspects, can be easily stated that gamification in e-Commerce has undergone significant shifts over the years, as companies have sought to leverage game-like elements to engage and motivate customers in new and innovative ways. As technology continues to evolve and consumer behavior changes, it is likely that gamification will continue to progress as well, creating new opportunities for e-Commerce businesses to connect with customers and drive growth.

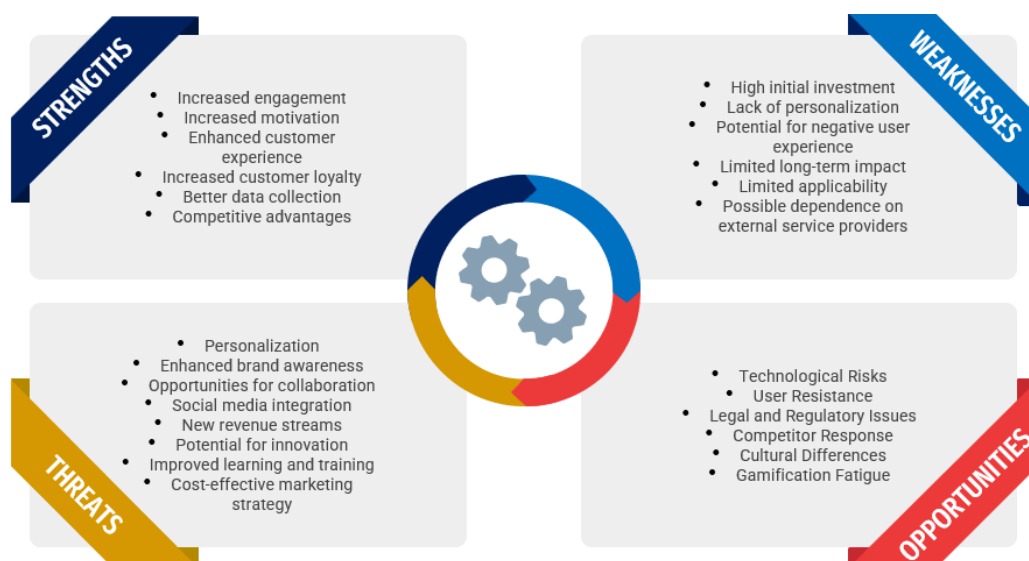## 5. Advantages and Challenges of Gamification Adoption in e-Commerce

As a way of understanding the considerations related to the adoption of gamification in e-Commerce, analyzing the advantages and challenges, respectively the less beneficial factors that may appear in the process in question becomes essential. Solving the previously mentioned objective undoubtedly requires extensive documentation, the results of which can later be materialized into information of great significance. In the current research, given the desire to provide an overview that is as easy to understand, it was decided to apply three well-known methods of analysis, namely the SWOT analysis, the VRIO analysis and the PESTLE analysis, the results of which will be synthesized in the following subsections.

5.1 The Strengths, Weaknesses, Opportunities, and Threats of Gamification Adoption in e-Commerce

As is already well-known, the SWOT analysis represents a strategic basic planning tool used to evaluate the strengths, weaknesses, opportunities, and threats of an organization or a project. In the present case, given the analyzed phenomenon, the analysis refers to the process of adopting gamification in e-Commerce, addressing the four directions of interest individually.

Unquestionably, the SWOT analysis can help organizations to understand their current position and make informed decisions about their future strategies, including those linked to the integration of gamification within their activities. Under these considerations, Figure 4 depicts some key facts on each sphere of interest, aspects that can be used to identify areas of improvement, prioritize actions, and mitigate potential risks.

Figure 4: The SWOT analysis elements

STRENGTHS
- Increased engagement
- Increased motivation
- Enhanced customer experience
- Increased customer loyalty
- Better data collection
- Competitive advantages

WEAKNESSES
- High initial investment
- Lack of personalization
- Potential for negative user experience
- Limited long-term impact
- Limited applicability
- Possible dependence on external service providers

THREATS
- Personalization
- Enhanced brand awareness
- Opportunities for collaboration
- Social media integration
- New revenue streams
- Potential for innovation
- Improved learning and training
- Cost-effective marketing strategy

OPPORTUNITIES
- Technological Risks
- User Resistance
- Legal and Regulatory Issues
- Competitor Response
- Cultural Differences
- Gamification Fatigue

Source: Authors' sketching

To gain a better understanding of the potential of gamification in e-Commerce, the results of a SWOT analysis could be briefly detailed as follows:

- **S**trengths:
  - Increased engagement: Gamification can help increase customer engagement (García-Jurado, Torres-Jiménez, Leal-Rodríguez, & Castro-González, 2021) and retention by providing an interactive experience for users.
  - Increased motivation: Gamification can incentivize customers to complete tasks, make purchases, and engage with the brand by providing rewards, badges, and other incentives.
  - Enhanced customer experience: Gamification can enhance the overall customer experience (Mominzada, Abd Rozan, & Aziz, Consequences of user experience in a gamified e-commerce platform., 2021) by providing a unique and memorable experience that differentiates the brand from competitors.
  - Increased customer loyalty: Gamification techniques can help to build customer loyalty by rewarding customers for their loyalty and encouraging repeat purchases (Aparicio, Costa, & Moises, 2021).
  - Better data collection: Gamification techniques can provide e-Commerce platforms with valuable data on user behavior and preferences, which can be used to improve marketing strategies and product offerings.
  - Competitive advantages: Gamification initiatives can offer e-Commerce platforms competitive advantages by making them stand out from other platforms and attracting more users.

- **W**eaknesses:
  - High initial investment: One of the major weaknesses of gamification in e-Commerce could be the high cost of implementation. Building a gamification strategy from scratch can be expensive and time-consuming.
  - Lack of personalization: Gamification elements that are not tailored to users' individual preferences and behaviors may not be effective, leading to a lack of engagement and adoption.
  - Potential for negative user experience: Poorly designed gamification elements can lead to a negative user experience, causing frustration, and potentially damaging the brand reputation.
  - Limited long-term impact: Gamification elements may be effective in the short term but may not have a lasting impact on customer behavior and loyalty.
  - Limited applicability: Gamification may not be suitable for all types of e-Commerce platforms or products. For example, some products may not lend themselves well to gamification elements.
  - Possible dependence on external service providers: E-Commerce businesses that rely on third-party service providers for gamification elements may face risks such as vendor lock-in, dependency, and lack of control over the elements.

- **O**pportunities:
  - Personalization: Gamification can be used to personalize the customer experience by tailoring rewards and incentives based on the customer's behavior and preferences.
  - Enhanced brand awareness: Gamification can help increase brand awareness and reach, as customers are more likely to share their positive experiences with friends and family on social media.
  - Opportunities for collaboration: Gamification can provide opportunities for collaboration with other businesses and organizations, such as partnering with game developers or offering rewards from other businesses as part of a gamification strategy.

- Social media integration: Gamification can be integrated with social media platforms to increase reach and engagement with customers and drive social sharing.
- New revenue streams: Gamification can provide opportunities for new revenue streams, such as in-game purchases or subscriptions.
- Potential for innovation: Gamification can encourage innovation and creativity in e-Commerce platforms, leading to the development of new and innovative ways to engage with users and improve the overall shopping experience.
- Improved learning and training: Gamification can be used for learning and training purposes, such as onboarding new employees or educating users on product features and benefits.
- Cost-effective marketing strategy: Gamification techniques can be a cost-effective marketing strategy compared to traditional advertising methods, as they can help to create a buzz around a brand and generate user-generated content.

- **T**hreats:
  - Technological Risks: The adoption of gamification in e-Commerce may require new technologies, which can be expensive to implement and maintain. This can increase the operational costs of the e-Commerce platform and reduce the feasibility of the adoption of gamification.
  - User Resistance: Some users may not be receptive to gamification elements in e-Commerce, leading to a negative user experience. This can result in lower customer satisfaction, reduced loyalty, and negative word-of-mouth, which can affect the reputation and profitability of the e-Commerce platform.
  - Legal and Regulatory Issues: The use of gamification in e-Commerce may raise legal and regulatory issues, such as data privacy, intellectual property rights, and consumer protection. Failure to comply with these laws and regulations can result in legal action, fines, and reputational damage.
  - Competitor Response: Competitors may also adopt gamification elements in their e-Commerce platforms, leading to increased competition and reduced differentiation for the e-Commerce platform.
  - Cultural Differences: The adoption of gamification in e-Commerce may not be well-received in certain cultures or regions, leading to lower user engagement and adoption. This can limit the potential of gamification as a marketing tool in those markets.
  - Gamification Fatigue: Overuse of gamification in e-Commerce may lead to gamification fatigue, where users become bored with the game-like elements and lose interest in the platform. This can result in reduced user engagement and adoption and can also affect the long-term sustainability of gamification as a marketing tool.

Based on the above-mentioned issues, but not limited to, the SWOT analysis suggests that gamification adoption in e-Commerce can be a valuable tool for improving user engagement and sales but requires careful consideration of its advantages and limitations. Also, to provide more valuable results, the SWOT analysis should be carried out by customizing a certain economic entity or brand for which the integration of gamification is sought.

5.2 The VRIO Analysis for Gamification Adoption in e-Commerce

Representing a framework for evaluating the internal resources and capabilities of an organization, the VRIO analysis aims to determine their potential value, rarity, inimitability, and organizational support. Without any doubt, the VRIO analysis could help organizations to understand their competitive advantage and can be used to prioritize investment in resources and capabilities that provide the most value.

Referring to the instrument in question from the general perspective, of an entity that adopts gamification in e-Commerce, without taking into account other related influential factors, the following basic aspects can be mentioned:

- **V**aluable: Gamification usage in e-Commerce can provide value to a brand by increasing customer awareness and loyalty (Abou-Shouk & Soliman, 2021), engagement and motivation (Mominzada, Abd Rozan, & Aziz, Consequences of user experience in a gamified e-commerce platform, 2021). It can differentiate a brand from competitors by providing a unique and memorable customer experience.
- **R**are: While gamification is becoming more common in e-Commerce, not all brands are using it effectively, and not all customers are familiar with gamification mechanics. Brands that can implement gamification effectively may have a competitive advantage over those that do not.
- **I**nimitable: Gamification usage in e-Commerce can be difficult to imitate, as it requires a combination of software development, design, and marketing expertise. Brands that have already established a gamification strategy may have a first-mover advantage, making it difficult for competitors to replicate their success.
- **O**rganizational Support: To implement gamification effectively, a brand needs to have strong organizational support and resources, including expertise in software development, design, and marketing. Brands that prioritize gamification as a core strategy and allocate the necessary resources may be more successful in implementing it effectively.

Common elements can thus be observed between the results of the two analysis tools, briefly described, namely VRIO and SWOT. Similar to the SWOT analysis, the VRIO instrument acquires greater significance when it is carried out for a specific organization, a fact that is fully recommended.

5.3 The Political, Economic, Sociocultural, Technological, Legal, and Environmental Factors That May Impact May Impact the Gamification Adoption in E-Commerce

The adoption of gamification in e-Commerce can be impacted by a large number of factors, associated with the organization or beyond its total control. While the SWOT analysis focuses on both internal (strengths and weaknesses) and external (opportunities and threats) factors to assess an organization's current situation and potential strategies, the PESTLE analysis considers external factors. Therefore, the PESTLE framework could be used to analyze the macro-environmental factors that can impact the gamification adoption for an e-Commerce organization or a business.

The acronym PESTLE stands for *Political*, *Economic*, *Social*, *Technological*, *Legal*, and *Environmental* factors and, considering the integration of gamification in e-Commerce, in general, could be described as follows:

- **Political:**
  - Government Regulations: The e-Commerce industry is subject to various government regulations and policies that can impact the adoption of gamification. For example, regulations related to data privacy, consumer protection, and intellectual property can impact the design and implementation of gamification elements.
  - Political Stability: Political instability in a country or region can impact the e-Commerce industry and the adoption of gamification. Political instability can result in disruptions to internet connectivity, logistics, and supply chains, which can negatively impact the user experience and the adoption of gamification elements.
  - Trade Agreements: Trade agreements between countries can impact on the e-Commerce industry and the adoption of gamification. For example, trade barriers and tariffs can increase the costs of implementing gamification elements and reduce the feasibility of adoption.
  - Taxation Policies: Taxation policies in a country or region can impact the e-Commerce industry and the adoption of gamification. For example, high tax rates can increase the

operational costs of e-Commerce platforms, reducing the feasibility of implementing gamification elements.

- Political Pressure: Political pressure from interest groups and lobbying organizations can impact the e-Commerce industry and the adoption of gamification. For example, consumer advocacy groups may pressure governments to regulate the use of gamification elements in e-Commerce to protect consumers from potential harm or exploitation.
- Intellectual Property Laws: Intellectual property laws and policies can impact the e-Commerce industry and the adoption of gamification. For example, patent and trademark laws can impact the design and implementation of gamification elements, while copyright laws can impact the use of copyrighted material in gamification elements.

- **Economic:**
  - Consumer Spending: Consumer spending is a crucial factor that affects e-Commerce platforms. Gamification can potentially increase the average order value, but it may also increase the cost of development and maintenance of the platform. Thus, the overall impact of gamification on the platform's revenue needs to be analyzed, taking into consideration consumer spending habits.
  - Currency Fluctuations: Currency fluctuations can affect the pricing of products and services in e-Commerce. As gamification may add to the cost of the e-Commerce platform, the exchange rate fluctuations can also affect the feasibility of gamification adoption in e-Commerce.
  - Economic Recession: Economic recessions can significantly affect consumer behavior and spending habits, which can, in turn, affect the profitability of e-Commerce platforms. Gamification adoption in e-Commerce may also become less feasible during economic downturns due to budget constraints.
  - Digital Divide: The digital divide refers to the disparity in access to technology and internet connectivity. As gamification requires digital platforms, the adoption of gamification in e-Commerce may be limited in areas with limited access to technology.
  - Employment Rates: Employment rates can affect consumer spending and, in turn, the profitability of e-Commerce platforms. During economic downturns, employment rates may fall, which can affect consumer spending and reduce the feasibility of gamification adoption in e-Commerce.
  - Tax Policies: Tax policies can significantly affect the pricing of products and services in e-Commerce. The implementation of gamification in e-Commerce platforms may attract additional taxes, which can increase the operational costs of the platform.

- **Sociocultural:**
  - Demographics: The adoption of gamification in e-Commerce may be influenced by demographic factors such as age, gender, income, and education level (García-Jurado, Castro-González, Torres-Jiménez, & Leal-Rodríguez, 2018; Aydin, 2018; Palmquist & Jedel, 2021). For example, younger generations may be more receptive to gamification elements, while older generations may prefer more traditional e-Commerce experiences.
  - Social Trends: Social trends such as the increasing importance of online socialization, sharing, and collaboration may influence the adoption of gamification in e-Commerce. Gamification elements that promote social interaction and engagement may be more popular among users who value these trends.
  - Consumer Behavior: The behavior of e-Commerce consumers may be influenced by factors such as their shopping habits, preferences, and values. For example, users who value convenience and efficiency may be more receptive to gamification elements that enhance the user experience and make the shopping process more enjoyable.
  - Cultural Differences: Sociocultural differences such as language, religion, and values may also influence the adoption of gamification in e-Commerce. Gamification elements

that are culturally sensitive and appropriate may be more successful in different regions and cultures.

– Lifestyle Changes: Changes in lifestyle factors such as work patterns, leisure activities, and health trends may also influence the adoption of gamification in e-Commerce. Gamification elements that are tailored to these lifestyle changes may be more appealing to users and drive engagement.

– Ethical and Social Responsibility: The adoption of gamification in e-Commerce may be influenced by ethical and social responsibility concerns, such as the impact of gamification on consumer behavior and the potential for addiction. E-Commerce platforms that adopt gamification elements should be aware of these concerns and take steps to mitigate any negative effects.

- **Technological:**
  – Advancements in Technology: The adoption of gamification in e-Commerce depends on the availability of advanced technology such as AI, machine learning, and big data analytics. The use of these technologies can help to personalize the gamification experience and improve its effectiveness.

  – Security Concerns: The use of gamification in e-Commerce can increase the security risks associated with online transactions. Therefore, e-Commerce platforms must adopt advanced security technologies such as encryption, secure payment gateways, and anti-fraud measures to ensure the safety of users' data and transactions.

  – Internet Connectivity: The adoption of gamification in e-Commerce depends on the availability of high-speed internet connectivity. This is particularly important for online games that require a real-time connection to the internet.

  – Mobile Devices: The increasing use of mobile devices such as smartphones and tablets has made it necessary for e-Commerce platforms to adopt mobile-friendly gamification solutions that are accessible and easy to use on mobile devices.

  – Compatibility with Existing Systems: The adoption of gamification in e-Commerce may require integration with existing e-Commerce systems such as payment gateways, inventory management systems, and CRM systems. Therefore, the technology used for gamification should be compatible with existing systems.

  – Cost of Technology: The adoption of gamification in e-Commerce may require the investment in new technology, which can be expensive. Therefore, e-Commerce platforms must carefully evaluate the costs and benefits of adopting gamification before investing in new technology.

- **Legal:**
  – Data Privacy and Security: Gamification in e-Commerce often requires the collection and storage of personal data of users, which raises concerns about data privacy and security. E-Commerce platforms need to comply with data protection laws such as the General Data Protection Regulation (GDPR) and ensure that user data is collected and stored securely.

  – Intellectual Property Rights: Gamification elements in e-Commerce, such as logos, images, and game mechanics, may be protected by intellectual property laws. E-Commerce platforms need to ensure that they have the legal right to use these elements and avoid infringing on the intellectual property rights of others.

  – Consumer Protection: E-Commerce platforms need to comply with consumer protection laws, such as the Consumer Rights Act and the Distance Selling Regulations. These laws set out the rights of consumers when purchasing goods and services online and require e-Commerce platforms to provide accurate and transparent information about products and services.

- Payment Regulations: E-Commerce platforms need to comply with payment regulations such as the Payment Services Directive (PSD2), which requires strong customer authentication for online payments. Platforms also need to ensure that payment processing is secure and meets regulatory standards.
- Anti-Fraud Regulations: E-Commerce platforms need to implement measures to prevent fraud, such as identity theft, phishing, and payment fraud. Platforms need to comply with regulations such as the Payment Card Industry Data Security Standard (PCI DSS) and the Anti-Money Laundering (AML) regulations.
- Advertising Regulations: E-Commerce platforms need to comply with advertising regulations, such as the Advertising Standards Authority (ASA) regulations, which set out standards for the content and presentation of advertising messages. Platforms need to ensure that advertising messages are accurate, transparent, and do not mislead users.

- **Environmental:** Environmental factors, such as climate change and sustainability, can also impact the adoption of gamification in e-Commerce. Gamification elements that promote sustainable behaviors and environmental responsibility may be more effective in engaging consumers who prioritize these values.

Understanding the external factors influencing gamification adoption in e-Commers is crucial for staying competitive, making informed decisions, and navigating the complex and dynamic business environment. However, the focus of the analysis in question on a specific organization is recognized again.

## 6. Modelling the Future of Using Gamification in e-Commerce

Even though the evolution of the gamification usage process in e-Commerce can be influenced by numerous factors, both endogenous and exogenous to the company or the initiating entity, it can be worthy assumed to consider first some general aspects directly linked to the technology development, and, subsequently, to focus on the generations defining characteristics. Although limited, the two proposed directions can contribute to a better understanding regarding the way in which the evolution of the use of gamification in e-Commerce is expected to be shaped, with the aim of bringing added value to the beneficiaries.

6.1 Gamification Directions Shaped by Tech Trends

Various prestigious studies and publications periodically analyze the trends regarding digitalization and, in particular, related to the technological side. Undoubtedly, the technological tools benefit from accentuated progress, a fact that leads determining potential development directions, their adoption representing, among other things, a matter of time.

Trying to identify which technological trends have the greatest significance for companies in 2022, representatives of the McKinsey Technology Council (Chui, Roberts, & Yee, 2022) carried out an analysis taking into account factors such as innovation (considering research and patents), interest (related to web searches and relevant news), investments and level of adoption. Based on the developed scores, Figure 5 highlights the results obtained, the colors varying from light blue (0 = no adoption) to dark blue (5 = mainstream adoption).

Figure 5: Technology trends in 2022
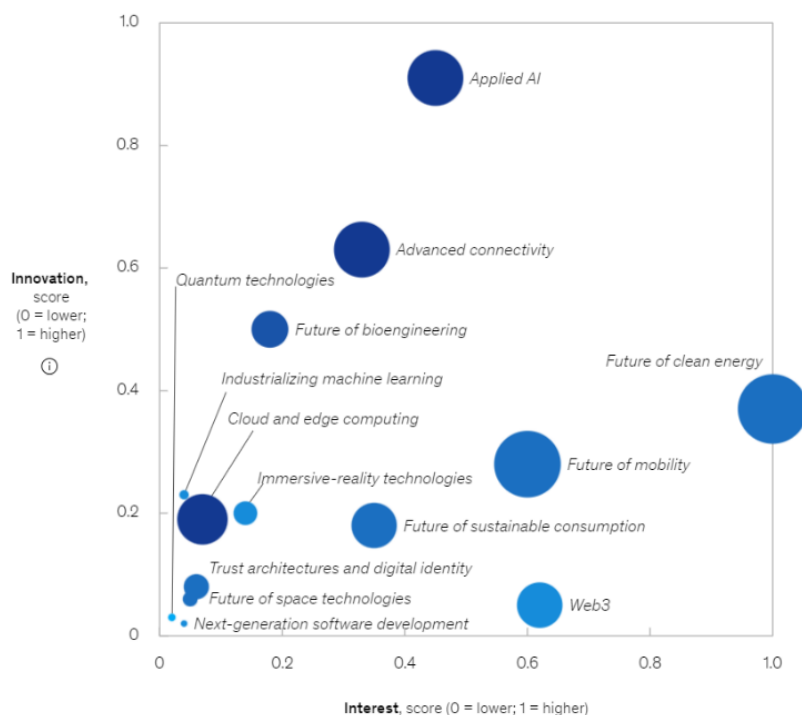
Source: Chart retrieved from (Chui, Roberts, & Yee, 2022)

The relatively recent publication provided by Forbes (Marr, 2022) refer to 10 main short-term trends in technology for 2023, as follows: (1) the use of AI anywhere, (2) the shift towards the reality of the metaverse, (3) progress in Web3 with an emphasis on Blockchain technology and the use of Non-fungible tokens (NFTs), (4) emerging bridges between the physical and the digital worlds, (5) increased possibilities of editable nature, (6, 7, 8) progress in quantum computing, autonomous systems and green technology, (9) the humanization of robots, and (10) the growth of sustainable technology.

Exposing a perspective similar to the previously presented one, the World Economic Forum (The World Economic Forum, 2023) referred, at the beginning of 2023, to the following directions of development or, as the case may be, improvement, in technology: green tech, cyber-resilience, hyper-connectivity, quantum computing, gene editing and the use of AI anywhere.

Although at the time of publication of the mentioned articles, the directions of progress could seem less realistic, the reality of the 2023 first six months proved the opposite, the evolution being evident on a global scale. Under these circumstances, an intensified evolution of technology is expected, focusing on the highlighted directions, followed by their improvement and progress in the long term, without excluding the possibility of new possibilities emerging.

Without any doubt, the future usage of gamification in e-Commerce will be influenced by the main tech trends, being likely focused on creating highly personalized, immersive, and interactive experiences that are, inter alia, tailored to individual customer preferences and behaviors. Looking ahead while considering the above discussed aspects, there are several key directions related to the technological evolution, that are more expected to occur in the future usage of gamification in e-Commerce:

- Personalization: As e-Commerce becomes increasingly personalized, gamification will need to adapt to provide tailored experiences for each individual user. This could involve using data analytics to track user behavior and preferences, and then using this information to create customized gamification strategies. Particularly, businesses are expected to use data analytics and machine learning algorithms to personalize gamification elements to individual customers. For example, e-Commerce companies might offer different rewards, challenges,

or game mechanics based on a customer's purchase history, browsing behavior, or other relevant data.

- Artificial intelligence (AI): AI can be used to analyze user behavior and create personalized gamification strategies. For example, AI algorithms can analyze user data to determine what rewards and incentives are most effective for different types of users.

- Mixed Reality (MR): Combining elements of AR and VR, MR can provide an even more immersive and interactive experience for customers, allowing them to interact with virtual products and environments in a more realistic way. Augmented reality (AR) is becoming more widespread in e-Commerce, allowing customers to visualize products in a more immersive way. Gamification can be integrated into AR experiences, such as allowing customers to unlock virtual rewards by interacting with products in certain ways. Similar to AR, virtual reality (VR) is another technology that can be used to create more immersive e-Commerce experiences. Gamification can be used to incentivize users to engage with VR content, such as completing challenges or exploring virtual environments.

- Voice-activated technology: As voice-activated technology becomes more ubiquitous, gamification could be integrated into voice-based interactions between customers and e-Commerce platforms. For example, customers could earn points or rewards for completing certain tasks using voice commands.

- Blockchain: Blockchain technology can be used to create secure and transparent loyalty programs that can be integrated with gamification. For example, customers could earn cryptocurrency-based rewards for completing certain actions, and these rewards could be tracked on a blockchain ledger.

- Facial recognition technology: Facial recognition can be used to create personalized experiences for customers, such as recommending products based on their facial features or providing incentives for using facial recognition to complete purchases.

- Biometric sensors: Wearable biometric sensors can track a customer's physical reactions and emotions, allowing for more accurate and personalized gamification experiences.

- Haptic feedback: Haptic feedback can provide physical sensations to the user, such as vibrations or pressure, creating a more tactile and immersive experience.

- Brain-computer interfaces (BCIs): BCIs can allow customers to control their virtual experiences with their thoughts, creating a truly immersive and interactive gamification experience.

- Natural Language Processing (NLP): NLP can be used to create conversational AI chatbots that can guide customers through the gamification experience, providing recommendations and assistance.

- 5G Networks: With faster and more reliable networks, e-Commerce platforms can deliver more engaging and interactive gamification experiences in real-time, without lag or buffering.

- Edge Computing: Edge computing can provide faster processing and response times, allowing for more dynamic and responsive gamification experiences.

- Quantum computing: Quantum computing can provide faster and more efficient processing power, allowing for more complex and dynamic gamification experiences.

- Digital Twins: Digital twins can provide virtual replicas of physical products or environments, allowing for more immersive and interactive gamification experiences.

In summary, the future of gamification in e-Commerce is likely to involve a range of new technologies that allow for more personalized, immersive, and secure experiences. By integrating gamification with these tech trends, e-Commerce platforms can create more engaging and rewarding experiences for their customers.

6.2 Gamification in e-Commerce Catering to the Different Generations Characteristics

Over the years, numerous studies aimed to present, often through comparison, even though in diverse contexts, the specific characteristics of the generations, the results clearly highlighting their different needs and desires (Williams & Page, 2011; Berkup, 2014; Duse & Duse, 2016; Kolnhofer-Derecskei, Reicher, & Szeghegyi, 2017; Bogoslov & Georgescu, 2019). Therefore, the future model of using gamification in e-Commerce is likely to be influenced by the evolving preferences and behaviors of different generations. The following aspects briefly describe how gamification in e-Commerce could evolve to cater to the needs and preferences of different generations:

- **Generation Z/Net Generation/iGeneration (1995-2010)**: Gen Z consumers are digital natives who are accustomed to immersive and interactive experiences. They value authenticity and personalization and are more likely to engage with gamification elements that feel relevant and tailored to their interests. In the future, gamification in e-Commerce will need to offer personalized experiences that use technologies such as AR and VR to create immersive shopping experiences that feel authentic and relevant to Gen Z's preferences.

- **Generation Y/Millenials (1980s - early 1990s)**: Millennials are comfortable with technology and are more likely to be motivated by social causes and sustainability. They value experiences over material possessions and are more likely to engage with gamification elements that offer a sense of social purpose or help them make more sustainable choices. In the future, gamification in e-Commerce will need to incorporate sustainability and social responsibility into their game mechanics to appeal to millennial consumers.

- **Generation X/Gen X-ers (1954 – 1980)**: Generation X consumers are more likely to be motivated by practicality and convenience. They value time and convenience over experiences and are more likely to engage with gamification elements that save them time and offer tangible benefits such as discounts or free shipping. In the future, gamification in e-Commerce will need to offer practical, time-saving gamification elements such as loyalty programs that offer tangible benefits to appeal to Gen X consumers.

- **Baby Boomers (1946-1964):** Baby Boomers are less likely to engage with gamification elements, but they still value personalization and convenience. They are more likely to engage with gamification elements that offer clear and tangible benefits, such as loyalty programs or discounts. In the future, gamification in e-Commerce will need to offer simple and clear gamification elements that are easy to understand and offer practical benefits to appeal to Baby Boomer consumers.

Moreover, referring to the VRIO analysis previously discussed taking into account the gamification usage in e-Commerce, some main aspects could be mentioned related to the generations' characteristics:

- **V**aluable: Gamification usage in e-Commerce can provide value to brands targeting younger generations, such as Millennials and Gen Z, who are more likely to be familiar with and enjoy gamification mechanics. For older generations, gamification can still provide value if it is tailored to their interests and preferences.

- **R**are: While gamification usage in e-Commerce is becoming more common, not all brands are using it effectively, especially in relation to different generational preferences and behaviors. Brands that can implement gamification effectively for different generations may have a competitive advantage over those that do not.

- **I**nimitable: Implementing gamification that is tailored to different generational preferences and behaviors can be difficult to imitate, as it requires a deep understanding of customer preferences and the ability to design engaging and relevant gamification mechanics. Brands that have already established a successful gamification strategy for different generations may have a first-mover advantage, making it difficult for competitors to replicate their success.

- **O**rganizational Support: To implement gamification effectively for different generations, a brand needs to have strong organizational support and resources, including expertise in customer

research, software development, design, and marketing. Brands that prioritize gamification as a core strategy and allocate the necessary resources for research and development may be more successful in implementing it effectively for different generations.

Based on the previously discussed aspects, the future model of using gamification in e-Commerce will need to consider the evolving preferences and behaviors of different generations, and offer personalized, immersive, and interactive gamification experiences that feel relevant and tailored to their needs and interests. However, it may be imitable over time, and its success depends on organizational support and resources, including the ability to research and understand different generational preferences and behaviors.

7. Conclusions, Limitations and Future Directions of Research

Gamification in e-Commerce has proved to be a promising tool to enhance customer engagement, loyalty, and sales. This research has highlighted several advantages of gamification adoption in e-Commerce, including increased customer retention, motivation, and satisfaction. Moreover, gamification can provide valuable insights into customer behavior and preferences, which can be leveraged to improve business strategies and personalized marketing campaigns.

However, gamification also presents several challenges that need to be addressed, such as balancing the game mechanics with the shopping experience, avoiding excessive gamification that may backfire, and ensuring data privacy and security. Therefore, it is crucial for e-Commerce businesses to adopt a strategic approach to gamification and evaluate its effectiveness regularly.

Future trends of gamification evolution in e-Commerce are likely to focus on the use of emerging technologies such as virtual reality (VR) and augmented reality (AR). These technologies could be used to create immersive shopping experiences for customers, where they can interact with products in a virtual space before making a purchase. Another trend in gamification in e-Commerce is the use of personalization. By using data analytics and machine learning algorithms, e-Commerce platforms can provide personalized recommendations and incentives to users based on their preferences and behaviors.

The study also recognized that gamification is an effective strategy for engaging customers across all generations, particularly among younger consumers. This is due to the fact that gamification elements like rewards, challenges, and social interaction can create a sense of enjoyment and competition that motivates users to return to the e-Commerce platform.

The present research also has several limitations that should be acknowledged. Firstly, the research focuses on the advantages and challenges of gamification from a business perspective, while the customer perspective could be further explored. Secondly, the research may not reflect the latest developments in gamification, as being limited to external sources. Finally, additional empirical research is needed in order to validate the findings.

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